



Common Upper Extremity Sports Injuries

Kristin Ernest, MD
Sports Medicine

Objectives:

- Recognize common upper extremity sports injuries
- Discuss prevention strategies



Background

- Increase in youth sport participation
 - 2 million high school injuries annually
- Risk factors for injury
 - Intrinsic
 - Extrinsic



Shoulder: Acute Injuries

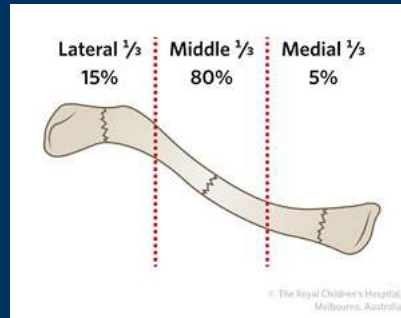


Clavicle Fracture

- Mechanism of injury
 - Fall on point of shoulder
 - Fall on outstretched hand
 - Direct force

- Presentation

- Severe pain
- Guarding
- Difficulty carrying affected arm



Picture courtesy of Royal Children's Hospital Melbourne



- Evaluation

- Deformity
- Neurovascular examination
- Imaging?

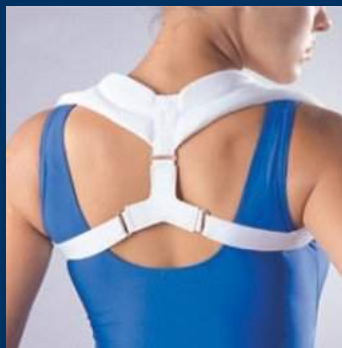


Picture courtesy of Kids Health



- Management

- Sling
- Sleep
- Pain medication
- Rehabilitation
 - Range of motion
 - ADLs



Picture courtesy of HubPages

- Orthopedic surgery referral

- Significantly angulated fracture
 - Severe tenting of skin
 - Neurovascular compromise
 - Persistent pain
 - Failure to form callus
 - Fracture location



Picture courtesy of FRPMED

Acromioclavicular (AC) Sprain

- Mechanism of Injury
 - Blow to top of shoulder
 - Fall on lateral or posterior shoulder
- Presentation
 - Pain on top of shoulder



Picture courtesy of Axon Physio & Acupuncture



- Evaluation
 - Swelling
 - Tenderness
 - Step-off
 - Range of motion
 - Scarf test
 - Imaging
 - Rockwood classification



Picture courtesy of Osce Skills



Rockwood Classification

1 st Degree	Extension of the acromioclavicular ligaments	-clear acromioclavicular articulation -clear coracoclavicular ligaments -clear trapeze and deltoid muscles	Orthopedic treatment
2 nd Degree	Break of the acromioclavicular ligaments	-increase the space in acromioclavicular joint -extended coracoclavicular ligaments -clear trapeze and deltoid muscles	Orthopedic treatment/surgery
3 rd Degree	Break of the acromioclavicular and coracoclavicular ligaments	- acromioclavicular joint dislocations - increase of the acromioclavicular space with 25-100% - muscles trapeze and deltoid detached of the distal part of clavicle	Orthopedic treatment
4 th Degree	Break of the acromioclavicular and coracoclavicular ligaments Acromioclavicular joint dislocations with posterior movement of the clavicle	-coracoclavicular space increased/normal -trapeze and deltoid muscles detached	Surgery treatment
5 th Degree	Break of the acromioclavicular and coracoclavicular ligaments Acromioclavicular joint dislocations	-increase of the acromioclavicular space with 100-300% -trapeze and deltoid muscles detached	Surgery treatment
6 th Degree	Break of the acromioclavicular ligaments	Subcoracoidal type -distal clavicle is dislocated inferior to coracoids process -coracobrachialis ligaments are disrupted Subacromial type -clavicle inferior to acromion -coracoclavicular space is smaller -coracoclavicular ligaments are disrupted	Surgery treatment

Table courtesy of Journal of Medicine and Life

• Management

- Sling
 - Grade I: 2-3 days
 - Grade II: 1-2 weeks
- Ice
- Rehabilitation exercises
 - Range of motion
 - Strengthening



Picture courtesy of Dr. David Geier and Sports Medicine Simplified

- Orthopedic surgery referral
 - Grade III or higher injury



Picture courtesy of AC separation forum

Glenohumeral Dislocation

- Mechanism of Injury
 - Shoulder abducted and forcefully externally rotated and extended
 - Fall on outstretched arm
 - Blow to posterior shoulder
- Presentation
 - Severe discomfort
 - Generalized weakness

- Evaluation

- Gross deformity
- Crepitus?
- Neurologic evaluation
 - Axillary nerve
- Imaging



Picture courtesy of PhysioPedia

- Management

- Shoulder reduction
 - Hippocratic method
 - <https://www.youtube.com/watch?v=cvCHI7pzNSs>
 - Sitting method
 - Prone method
- Imaging
- Sling
- Rehabilitation

- Orthopedic surgery referral

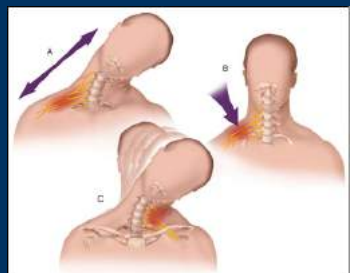
- Fracture of clavicle or humerus
- Bankart lesion
- Persistent pain



Picture courtesy of The Radiology Assistant

Brachial Plexus Injury ("Burner" or "Stinger")

- Mechanism of Injury
 - Traction most common
 - Compression
- Presentation
 - Immediate burning pain down arm
 - Dysesthesia
 - Numbness
 - Weakness



Picture courtesy of AAFP

- Evaluation

- Rule out C-spine injury
- Neurological exam
- Imaging
 - Plain films
 - MRI
- Consider nerve conduction study

- Management

- Rest
- Observation
- NO physical therapy



Picture courtesy of Happy News

Shoulder: Overuse Injuries



Recurrent Subluxation or Dislocation

- Mechanism of Injury
 - Position of abduction and external rotation
- Presentation
 - Describe shoulder “popping” or “popping out”



- Evaluation

- Atrophy of deltoid and trapezius
- Weak rotator cuff
- Load and shift test:
<https://www.youtube.com/watch?v=0edignSiNGs>
- Apprehension test:
<https://www.youtube.com/watch?v=IfPLBFgYbCg>
- Radiographs

- Management

- Rotator cuff strengthening
 - Physical therapy
 - Remove offending agents
 - Shoulder brace
- Orthopedic surgery referral
 - Operative stabilization as treatment option

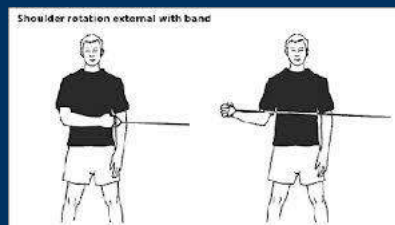
Impingement Syndrome

- Mechanism of Injury
 - Supraspinatus tendon pinched between humeral head and acromion with abduction
- Presentation
 - Pain
 - Similar to rotator cuff tendonitis

- Evaluation
 - Demonstrate multidirectional instability
 - Load and shift test
 - Impingement tests
 - Kennedy-Hawkins
 - Neer impingement test
 - MRI?



- Management
 - Similar to rotator cuff tendonitis
 - Relative rest
 - Pain medication
 - Strengthening



Picture courtesy of JTS Strength and The Shoulder Health Essentials

Physiolysis of the proximal humerus (Little League Shoulder)

- Mechanism of Injury
 - Repetitive throwing
- Presentation
 - Pain worsening with throwing
 - Insidious onset



Picture courtesy of Cincinnati Childrens

- Evaluation

- Tender to deep palpation proximal upper arm
- Slightly decreased ROM
- Mild weakness
- Radiographs



Picture courtesy of OrthoInfo

- Management

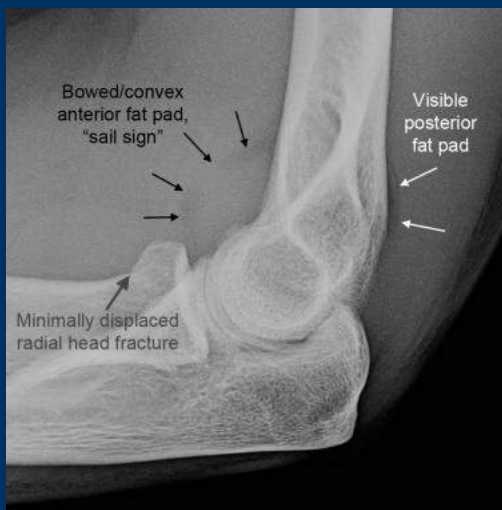
- Conservative
- Throwing cessation
- Radiographs
- Rotator cuff strengthening

Elbow: Acute Injuries



Elbow Fracture

- Presentation
 - Diffuse swelling
 - Limited range of motion
- Evaluation
 - Diffuse swelling
 - Limited range of motion
 - Imaging



Picture courtesy of Medscape



- Management
 - Splint
 - Sling
- Orthopedic surgery referral
 - Neurovascular compromise
 - Significant deformity
 - Supracondylar fracture



Picture courtesy of Kids Fractures

Elbow Dislocation

- Mechanism of Injury
 - Fall on outstretched hand
- Presentation
 - Pain
 - Gross deformity



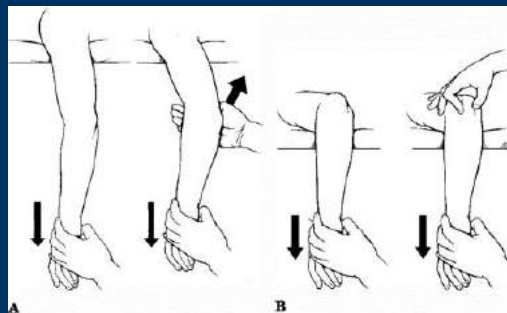
Picture courtesy of Christifurr

- Evaluation

- Neurologic exam
- Vascular exam
- Sensory exam
 - Ulnar nerve most commonly affected

- Management

- Reduction
 - May worsen injury
 - Parvin technique
- Repeat exam
 - Median nerve injury
- Imaging
- Splint and Sling
- Hospitalization



Picture courtesy of Emergency Medicine News

Elbow: Overuse Injuries



Medial Epicondylitis (Little League Elbow)

- Mechanism of Injury
 - Throwing with valgus stress on elbow
- Presentation
 - Insidious onset
 - Medial elbow pain



Picture courtesy of BaseballChiro.com



- Evaluation

- Mild soft tissue swelling
- Tender to palpation
- Normal range of motion
- Valgus stress testing
- Tinel test
- Imaging



Picture courtesy of HandLab

- Management

- REST
- Ice
- Education
 - Pitch counts

Wrist Injuries



Carpal Bone Fractures

- Mechanism of Injury
 - Fall on outstretched hand
- Presentation
 - Swelling
 - Tender to palpation
 - Scaphoid: anatomic snuffbox



Picture courtesy of AAFP



- Evaluation
 - Swelling and tenderness
 - Imaging
- Management
 - Thumb spica cast



Prevention

- Modify risk factors
 - Intrinsic
 - Strengthening to correct deficiencies
 - Optimize mechanics
 - Extrinsic
 - Activity modification
- Education

In Summary

- Most upper extremity injuries are due to overuse
- Rest and activity modification are crucial for recovery
- Education is critical to help prevent injury

